

I. Amendments

A. In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims

Please cancel claims 2-8, 10-18 and 20-25, and add new claims 26-45 as follows:

1. (cancelled previously)

2-8. (cancelled)

9. (cancelled previously)

10-18. (cancelled)

19. (cancelled previously)

20-25. (cancelled)

26. (new) A system for determining a position of a target, comprising:
- a processing unit;
 - the target, the target being reflective and moveable;
 - a first light source, a first light beam splitter, a first light beam steering device and a first light detector, the first light source being configured to emit a first light beam towards the first light beam splitter, the first light beam splitter being configured to reflect the first light beam emitted by the first light source towards the first light beam steering device, the first light beam steering device being configured, under control of the processing unit, to sweep the first light beam over a first full angular range and a first limited angular range, the target being configured to reflect the first light beam reflected from the first light beam steering device back towards the first light beam steering device for reflection therefrom as a first target reflected beam and thence towards and through the first light beam splitter to the first light detector for detection thereby;
 - a second light source, a second light beam splitter, a second light beam steering device and a second light detector, the second light source being configured to emit a second light beam towards the second light beam splitter, the second beam splitter being configured to reflect the second light beam emitted by the second light source towards the second light beam steering device, the second light beam steering device being configured, under control of the processing unit, to sweep the second light beam over a second full angular range and a second limited angular range, the target being configured to reflect the second light beam reflected from the second light beam steering device back towards the second light beam steering device for reflection therefrom as a second target reflected beam and thence towards and through the second light beam splitter to the second light detector for detection thereby;

wherein the processing unit is operably connected to the first and second light beam steering devices and configured to cause: (a) the first light beam steering unit to sweep through the first full angular range until the target is detected as a result of the first target reflected beam being reflected into the first light detector; (b) the second light beam steering unit to sweep through the second full angular range until the target is detected by the second target reflected beam being reflected into the second light detector; (c) the first light beam steering device to sweep through the first limited angular range in response to the first target reflected beam being detected by the first light detector; and (d) the second light beam steering device to sweep through the second limited angular range in response to the second target reflected beam being detected by the second light detector.

27. (new) The optical position tracking system of claim 26, wherein the processing unit is configured to determine the position of the target on the basis of the first limited angular range and a first angular position associated therewith, and the second angular limited range and a second angular position associated therewith.

28. (new) The optical position tracking system of claim 26, wherein the processing unit is configured to determine an absolute position of the target based on the first limited angular range and a first angular position associated therewith, and the second angular limited range and a second angular position associated therewith.

29. (new) The optical position tracking system of claim 26, wherein the first beam steering device is configured to dither about the position of the target after the first limited angular range has been swept through a first time.

30. (new) The optical position tracking system of claim 26, wherein the second beam steering device is configured to dither about the position of the target after the second limited angular range has been swept through a first time.

31. (new) The optical position tracking system of claim 26, wherein the first beam steering device is configured to resume sweeping through the first full angular range after the target is no longer detected by the system.

32. (new) The optical position tracking system of claim 26, wherein the second beam steering device is configured to resume sweeping through the second full angular range after the target is no longer detected by the system.

33. (new) The optical position tracking system of claim 26, wherein the target includes a retro-reflecting surface.

34. (new) The optical position tracking system of claim 26, wherein at least one of the first light beam steering device and the second light beam steering device is selected from a group consisting of a MEMS (micro-electromechanical system) motor beam steering device, a galvanometer beam steering device, an acousto-optic beam steering device, an electro-optic beam steering device, a grating structure beam steering device, a holographic structure beam steering device, and a scanning mirror beam steering device.

35. (new) The optical position tracking system of claim 26, wherein at least one of the first light beam and the second light beam is generated by a light source selected from a group consisting of an incandescent technology-based light source, an LED (light emitting diode) technology-based light source, a semiconductor laser technology-based light source, and a rare-earth laser technology-based light source.
36. (new) The optical position tracking system of claim 26, further comprising means for enabling a cursor in a computer to be controlled according to the position of the target.
37. (new) The optical position tracking system of claim 26, further comprising means for inputting data representative of the position of the target.
38. (new) A method of determining a position of a target using a system comprising a processing unit, the target, the target being reflective and moveable, a first light source, a first light beam splitter, a first light beam steering device and a first light detector, the first light source being configured to emit a first light beam towards the first light beam splitter, the first light beam splitter being configured to reflect the first light beam emitted by the first light source towards the first light beam steering device, the first light beam steering device being configured, under control of the processing unit, to sweep the first light beam over a first full angular range and a first limited angular range, the target being configured to reflect the first light beam reflected from the first light beam steering device back towards the first light beam steering device for reflection therefrom as a first target reflected beam and thence towards and through the first light beam splitter to the first light detector for detection thereby, a second

light source, a second light beam splitter, a second light beam steering device and a second light detector, the second light source being configured to emit a second light beam towards the second light beam splitter, the second beam splitter being configured to reflect the second light beam emitted by the second light source towards the second light beam steering device, the second light beam steering device being configured, under control of the processing unit, to sweep the second light beam over a second full angular range and a second limited angular range, the target being configured to reflect the second light beam reflected from the second light beam steering device back towards the second light beam steering device for reflection therefrom as a second target reflected beam and thence towards and through the second light beam splitter to the second light detector for detection thereby, wherein the processing unit is operably connected to the first and second light beam steering devices and configured to cause: (a) the first light beam steering unit to sweep through the first full angular range until the target is detected as a result of the first target reflected beam being reflected into the first light detector; (b) the second light beam steering unit to sweep through the second full angular range until the target is detected by the second target reflected beam being reflected into the second light detector; (c) the first light beam steering device to sweep through the first limited angular range in response to the first target reflected beam being detected by the first light detector; and (d) the second light beam steering device to sweep through the second limited angular range in response to the second target reflected beam being detected by the second light detector, the method comprising:

sweeping the first light beam through the first full angular range until the target is detected thereby;

sweeping the first light beam through the first limited angular range after the target has been detected;

sweeping the second light beam through the second full angular range until the target is detected thereby;

sweeping the second light beam through the second limited angular range after the target has been detected;

determining, with the processing unit, the position of the target based on the first limited angular range and the second limited angular range.

39. (new) The method of claim 38, further comprising dithering the first beam steering device about the position of the target after the first limited angular range has been swept through a first time.

40. (new) The method of claim 38, further comprising dithering the second beam steering device about the position of the target after the second limited angular range has been swept through a first time.

41. (new) The method of claim 38, further comprising the first beam steering device resuming sweeping through the first full angular range after the target is no longer detected by the system.

42. (new) The method of claim 38, further comprising the second beam steering device resuming sweeping through the second full angular range after the target is no longer detected by the system.

43. (new) The method of claim 38, wherein determining the position of the target further comprises determining the absolute position of the target.

44. (new) The method of claim 38, further comprising controlling a cursor in a computer according to the position of the target.

45. (new) The method of claim 38, further comprising inputting data representative of the position of the target to a computer.